

**WE CLAIM:**

1. A pharmaceutical parathyroid hormone antagonist comprising a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount and a pharmaceutical carrier or excipient.
2. The antagonist of Claim 1 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])
3. A method for affecting the binding of parathyroid hormone to parathyroid hormone receptors through the use of a parathyroid hormone antagonist comprising the administration of a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount.
4. The method of Claim 3 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])
5. A method for treating a patient having hyperparathyroidism comprising administering a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount.
6. The method of Claim 5 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])
7. A method for treating a patient having renal osteodystrophy comprising administering a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ

ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount.

5 8. The method of Claim 7 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])

9. A method for *in vivo* modulation of calcium ion concentration in blood comprising administering a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting  
10 PTH antagonist activity in a therapeutically effective, but non-toxic amount.

10. The method of Claim 9 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])

15 11. A method for treating a patient having osteoporosis comprising administering a peptide having an amino acid sequence from between (SEQ ID No.2 [PTH<sub>2-84</sub>]) and (SEQ ID No. 3 [PTH<sub>34-84</sub>]) or a conservatively substituted variant thereof exhibiting PTH antagonist activity in a therapeutically effective, but non-toxic amount.

20 12. The method of Claim 11 wherein the peptide administration is either in a continuous or in a pulsatile manner.

13. The method of Claim 11 wherein the peptide has an amino acid sequence from between (SEQ ID No.4 [PTH<sub>3-84</sub>]) and (SEQ ID No. 5 [PTH<sub>28-84</sub>])

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